

## A NEW *SESIA* CLEARWING MOTH FROM MICHIGAN (SESIIDAE)

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**ABSTRACT.** *Sesia spartani*, new species was discovered in Michigan (30 males) in traps baited with a sex attractant consisting of 50:50 mixture of (3,13) Z,Z-ODDOH/ (3,13) E,Z-ODDOH. The new species is described, illustrated, and compared with *S. tibialis* (Harris). The two differ in structure of male antennae, genital morphology, response to sex attractants, and seasonal occurrence.

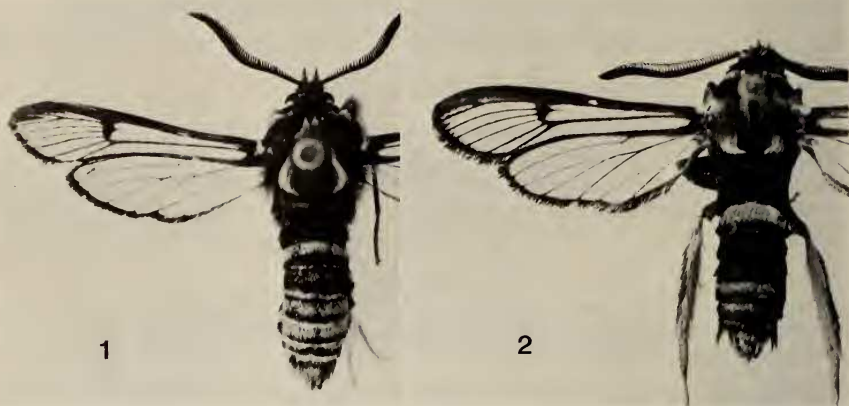
**Additional key words:** *Sesia spartani*, *S. tibialis*, attractants.

Use of synthetic sex attractants has resulted in the discovery of several new species of sesiids in the Western Hemisphere (Duckworth & Eichlin 1977a, 1977b, Greenfield & Karandinos 1979, Brown et al. 1985, Eichlin 1986, 1987).

During studies employing sex attractant baits to survey the Sesiidae of Michigan, a new species closely related to *Sesia tibialis* (Harris) was discovered and is described below. Males of *S. tibialis* (Fig. 2) are known to be very responsive to the Z,Z isomer of 3,13-octadecadien-1-ol acetate (Z,Z-ODDA) (Duckworth & Eichlin 1978:28), a major component of many clearwing moth pheromone systems (elucidated by Tumlinson et al. 1974). In Saskatchewan, Underhill et al. (1978) found the best attractant was probably a 80:20 blend of Z,Z-ODDA/Z,Z-ODDOH. The new species was discovered in the Lower Peninsula of Michigan when males were captured in traps baited with sex attractants consisting of a 50:50 mixture of the Z,Z and E,Z alcohols (Z,Z-ODDOH/E,Z-ODDOH). Traps baited with other sex attractants including that known to be effective for *S. tibialis* were deployed in the same areas throughout the collecting season but failed to capture any *S. spartani*.

### *Sesia* Fabricius

Genus *Sesia* is characterized by the following: Head with haustellum reduced, about  $\frac{1}{2}$  length of labial palpus; antenna strongly clavate, ventrally ciliate-unipectinate on male; horizontal flat plate of scales projecting somewhat over middle of eye. Forewing vein R<sub>4</sub> terminating at apex, R<sub>5</sub> below. Hindwing veins M<sub>3</sub> and Cu<sub>1</sub> joined at corner of cell or very short-stalked. Genitalia unique, generally as shown in Figs. 5 and 6.



FIGS. 1, 2. Adult males of *Sesia* spp. 1, *S. spartani*, Shiawassee Co., Michigan (holotype); 2, *S. tibialis*, Isabella Co., Michigan.

### *Sesia spartani*, new species

**Male** (Fig. 1). Head with vertex brown-black, some white posteriorly; front brown-black; occipital fringe white dorsally, yellow laterally; labial palpus roughened with long hairlike scales ventrally on basal segment, yellow with brown toward base; haustellum short, less than  $\frac{1}{2}$  length of labial palpus; antenna brown-black with yellow-orange at tip, unipectinate, individual middle segments with ramus about 3 times as long as the distance between 2 adjacent rami (dorsoapical view of antenna), produced from dorsoapical portion of segment (Fig. 3). Thorax brown-black with yellow behind collar, around wing bases, subdorsally on posterior half of mesothorax, and variously on metathorax. Abdomen brown-black but with broad yellow bands on segments 5, 6, and 7, less so on 4 dorsally; tip of abdomen mostly yellow with anal tuft poorly defined. Wings hyaline; narrow margins and discal spot brown. Wing length 8–9 mm (30 n). Legs with coxae brown-black edged with yellow; femora yellow dorsally, brown-black ventrally; tibiae yellow, hind tibia roughened dorsally by semierect, thin, elongate scales; tarsi yellow-orange. Genitalia as in Fig. 6.

**Female.** Unknown.

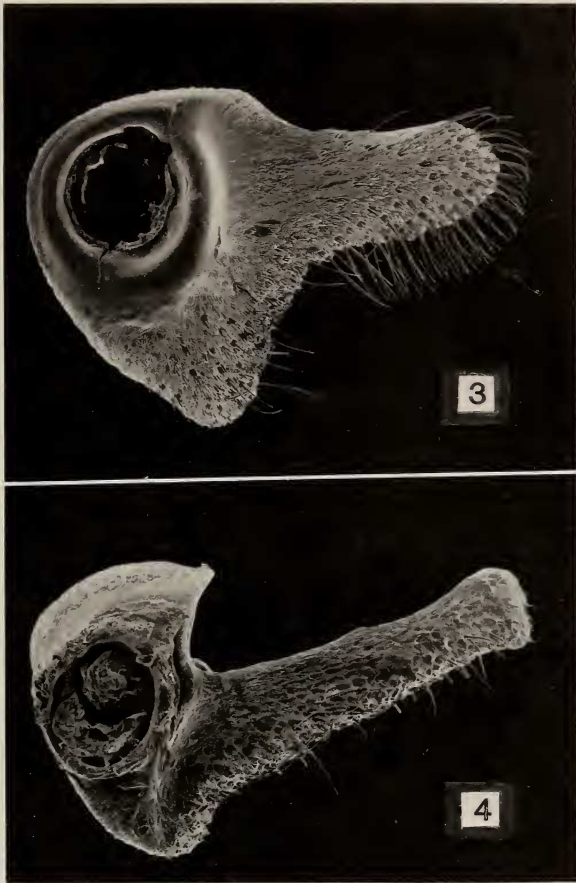
**Host.** Probably species of Salicaceae, particularly *Populus tremuloides* Micheaux (quaking aspen), based on observed larval damage to trees at the type locality and at other sites where *S. spartani* was collected.

**Distribution.** *Sesia spartani* has been collected in the Lower Peninsula of Michigan in Clinton, Shiawassee, and Lake counties.

**Types.** Holotype: Male, MICHIGAN: Shiawassee Co., Bath, 13 June 1987, Coll. William H. Taft; Rose Lake Wildlife Research Area, T5N R1E Sec 20; ZZOH/EZOH, 50:50; deposited in Entomology Museum, Michigan State University, East Lansing (MSU). Paratypes (29 males): 6, Shiawassee Co.: V-29-1987 (1); VI-9-1987 (2); T5N R1E Sec 20, 13 June 1987 (2); same as last except 14 June 1987 (1). 22, Clinton Co.: T5N R2W Sec 31, 13 June 1987 (3); same as last except 14 June 1987 (2); 16 June 1987 (4); 17 June 1987 (7); 19 June 1987 (2); 20 June 1987 (4). 1, Lake Co.: T17N R14W Sec 12, 14 June 1987 (all collected by William H. Taft using traps baited with ZZOH/EZOH 50:50).

Paratypes are deposited in MSU; U.S. National Museum of Natural History, Washington, D.C.; California Department of Food and Agriculture, Sacramento; Canadian National Collection, Ottawa, Ontario; and Field Museum, Chicago, Illinois.

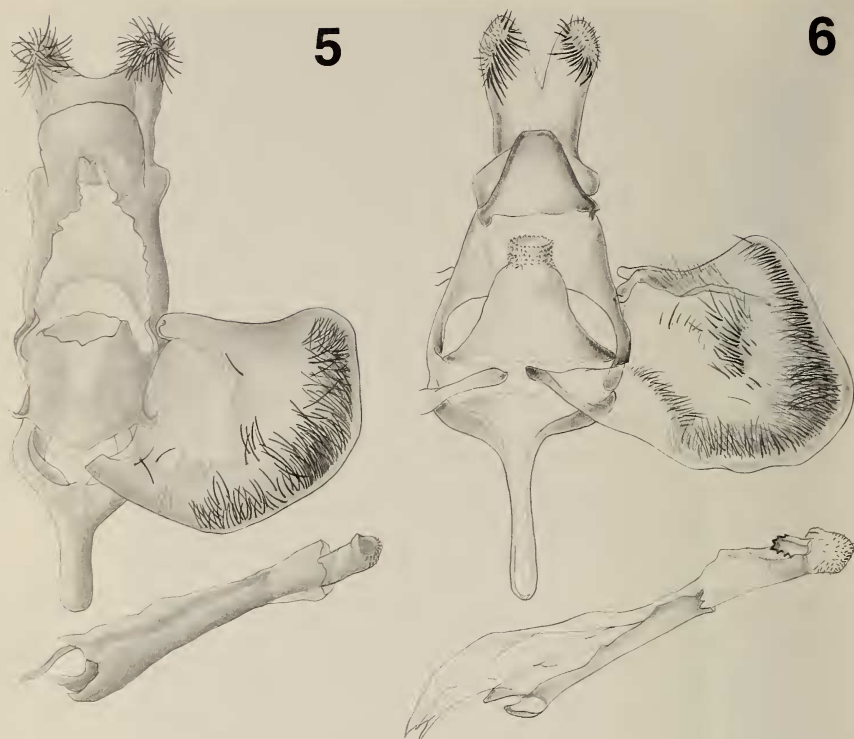
**Discussion.** *Sesia spartani* is superficially similar to *S. tibialis*. However, male genitalia



FIGS. 3, 4. Segments from near middle of left antennae of *Sesia* spp. as viewed ventrally on proximal surface by scanning electron microscope. 3, *S. spartani*; 4, *S. tibialis*.

differ considerably (Figs. 5, 6): *S. spartani* uncus deeply and acutely divided, cleft of *S. tibialis* uncus less deep, broadly rounded; saccus about  $\frac{1}{2}$  length of valve, only  $\frac{1}{3}$  on *S. tibialis*; valve more produced ventroposteriorly and with more thick, dark spines near center than on *S. tibialis*; gnathos narrowing apically and of different form than for *S. tibialis*; and aedeagus with jagged plate posteriorly, *S. tibialis* lacking jagged plate. Some specimens of *S. tibialis* from Michigan (Fig. 2) are nearly lacking yellow dorsally on abdominal segments 4 and 5, while on *S. spartani* segment 5 is mostly yellow, and 4 has some yellow powdering. *Sesia tibialis* from elsewhere usually has yellow banding on all segments.

The collecting sites were low muck soil depressions in scattered locations. These habitats are characterized by large stands of regrowth quaking aspen mixed with willows (*Salix* spp.), elm (*Ulmus* sp.), red maple (*Acer rubrum* L.), and black cherry (*Prunus serotina* Ehrh.). The undergrowth is dogwood (*Cornus* sp.), viburnum (*Viburnum* sp.), and blueberries (*Vaccinium* sp.).



FIGS. 5, 6. Male genitalia of *Sesia* spp. viewed ventrally, left valve removed. 5, *S. tibialis* (from Duckworth & Eichlin 1978); 6, *S. spartani*.

The *S. spartani* males were captured in Multi-pher #1<sup>®</sup> plastic pheromone traps. Collecting dates for *S. spartani* were 29 May–20 June 1987. *Paranthrene dollii* (Neumoegen) was collected with *S. spartani* during late May and early June. At the time of capture, the growing season was 250–300 degree-days (base 50) above normal; consequently, in normal years *S. spartani* may fly later in June or in early July. It appears to fly two weeks to a month earlier than does *S. tibialis* in Michigan. *Sesia tibialis* has not been found in counties where *S. spartani* originated, but has been collected as far south as Newaygo, Isabella, and Midland counties, and is known from Nova Scotia and New England to British Columbia, and from the Rocky Mountains to the Pacific Coast. The Michigan habitats for both species appear to be similar.

This species is named for the Spartans, a nickname applied to Michigan State University athletic teams.

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